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First distributional record of *Parascolopsis akatamae* Miyamoto, McMahan, & Kaneko, 2020, a dwarf monocle bream (Perciformes, Nemipteridae), from Indian waters

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Abstract

New records of *Parascolopsis akatamae* Miyamoto, McMahan, & Kaneko, 2020 are reported from India's southeast coast. Three specimens were collected in April 2021 on the Parangipettai coast, Tamil Nadu, India. We examined and compared morphometric and meristic characters of our specimens with published data from the holotype. The new India records expand the known distribution of *P. akatamae*, which had previously been reported from southern Japan, Taiwan, Indonesia, and Thailand. *Parascolopsis akatamae* is a new addition to the list of marine fishes from Indian coastal waters.

Keywords

Fish, India, marine, Parangipettai, species report

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Introduction

The family Nemipteridae (Perciforms, Pisces) comprises ~70 species in five genera, including *Nemipterus* Swainson, 1839 (threadfin breams, 27 species), *Pentapodus* Quoy & Gaimard, 1824 (whiptail breams, 12 species), *Scolopsis* Cuvier, 1814 (monocle bream, 20 species), *Parascolopsis* Boulenger, 1901 (dwarf monocle bream, 13 species), and *Scaevius* Whitley, 1947 (coral breams, one species) (Fricke et al. 2021; Miyamoto et al. 2020; Russell et al. 2022). In Indian coastal waters, 24 species of nemipterids have been reported in three genera: *Nemipterus*, *Scolopsis*, and *Parascolopsis* (Barman and Mishra 2009). Nemipterids are confined to the tropical and subtropical Indo-West Pacific region. They lead a benthic mode of life and prefer muddy and sandy substrata along the continental shelf at depths to 300–500 m. Species of Nemipteridae are commercially important;

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many are targeted by the regional fisheries and are prominent bottom trawl catches (Russell 1990, 2001).

The genus *Parascolopsis*, known as dwarf monocle breams, includes benthic fishes generally found in the outer shelf and continental slope waters with soft bottoms; they occur at depths up to 500 m. Dwarf monocle breams are distributed throughout the tropical Indo-West Pacific, ranging from the Western Indian Ocean, including Red Sea and Persian Gulf, to north-eastern Australia and as far as southern Japan and southwards to Delagoa Bay on East African coast (Russell and Golani 1993). The genus *Parascoloposis* is distinguished from *Scolopsis* by the absence of a suborbital spine. Generally, these fishes are caught as trawl by-catch, and they have no commercial importance due to their low economic value. However, given the pigmentation and colour patterns on the body surface, these species have some ornamental value and have been popular with aquarium hobbyists (Nair et al. 2012).

Recently, Miyamoto et al. (2020) described *P. akatamae* Miyamoto, McMahan, & Kaneko, 2020 based on the following morphological features: 16–19 gill rakers on the first arch; length of forked part of caudal fin 5.8–6.5 times in standard length; eye diameter 1.3–1.8 times in length of the longest dorsal fin spine; and presence of pale-yellow stripe from lower edge of the eye to posterior edge of the preopercle. *Parascolopsis akatamae* is morphologically similar to and long confused with *P. eriomma* (Jordan & Richardson, 1909) but can be discriminated with morphological traits, colour, and pigmentation patterns. It is possible that *P. eriomma* is largely restricted to the West Pacific whereas *P. akatamae* is more widely distributed in the Indo-West Pacific and is more common in Japan and Taiwan (Hung et al. 2016; Miyamoto et al. 2020). Miyamoto et al. (2020) further opined that *P. akatamae* can occur on the Indian coast based on their examination of published photographs (Naik et al. 2002: fig. 1, Goa; Kannan et al. 2013: fig. 1, Tuticorin). Herein, we report *P. akatamae* for the first time from Indian waters and compare the morphological characters of our specimens of this species with published data from the holotype from Okinawa, Japan.

Methods

Field surveys were conducted on a monthly basis at the Parangipettai fish landing centre, Tamil Nadu, south-eastern coast of India (11°30′N, 079°46′E; Fig. 1), and three specimens of *P. akatamae* were collected from the bycatch of a bottom trawl (mesh size range, 20–40 mm) catch on 21 April 2021. Usually, bottom trawling is carried out in near- and offshore fishing grounds between Pazhayar (11°21′N, 079°46′E) in the south and Cuddalore (11°42′N, 079°46′E) in the north, 1–35 km from shore, and at depths ranging of 40–100 m. After collection of specimens from the fish landing centre, photographs were taken of specimens while still fresh, and specimens were preserved in 10% formaldehyde solution. We identified our specimens to species by consulting the following literature: Russell (2001), Kannan et al. (2013), Hung et al. (2016), and Miyamoto et al. (2020). Measurements follow Russell (1990), Russell and Golani (1993), and Miyamoto et al. (2020). The morphometric measurements were made using digital Vernier calipers of 0.01 mm accuracy. We deposited our specimens in the Centre of Advanced Studies in Marine Biology, Annamalai University, Reference Museum, Parangipettai, India (CASMBURM).

Results

New records. INDIA – **Tamil Nadu** • Parangipettai Fish Landing Centre; 11°30′N, 079°46′E; 40–100 m depth, 1–35 km offshore; 21.IV.2021; G. Mahadevan leg.; from bycatch of a bottom trawler with mesh size of 20–40 mm; 3 spec. (CASMBURM 232116422).

Parascolopsis akatamae was previously known from southern Japan, Taiwan, Indonesia ,and Thailand (Miyamoto et al. 2020), but it is believed that it also occurs in Philippines, India, and Iraq based on published identifiable photographs (Naik et al. 2002; Kannan et al. 2013; Jawad & Al-Badri 2014; Fujiwara 2017; Miyamoto et al. 2020). Other nemipterids such as *Nemipterus bipunctatus* (Valenciennes, 1830), *N. japonicus* (Bloch, 1791), *N. nematophorus* (Bleeker, 1853), *N. randalli* (Russell, 1986), and *Scolopsis vosmeri* (Bloch, 1792) share habitat with *P. akatamae*.

Identification. Meristic and morphometric data for the specimens are presented in Table 1. Specimens from Parangipettai ranged in size from 137.6–223.5 mm standard length (SL). Dorsal-fin spines X and dorsal-fin soft rays 8 or 9; anal-fin spines III, anal-fin soft rays 7 or 8; pectoral-fin rays 16–18; pelvic-fin spines I, pelvic-fin soft rays 5; 11–14 scales below lateral-line; 3–5 scale rows on preopercle and opercle; gill rakers 16–20, vertebrae 10+14. Body moderately deep, deepest at pelvic-fin base, depth 37.5% of SL (34.6–39.7%); head length slightly shorter than body depth 31.4% SL (29.9–33.8%); snout short 7.8% SL (6.9–8.2%), with length less than diameter of eye 10.6% SL (7.8–11.4%); nostrils small, anterior and posterior nostrils closely aligned, located in front of eye; anterior nostril with small nasal flap; eyes large, round, located in upper portion of anteroposterior axis; interorbital width 8.5% of SL (7.9–9.8%), slightly shorter than eye diameter; mouth moderate, terminal, and slightly oblique; upper jaw nearly reaching to about level of anterior margin of pupil; upper jaw length 10.4% of SL (9.2–10.8%) almost similar to eye diameter; teeth on jaws villiform. Single dorsal fin, origin of dorsal fin above pectoral-fin base, pre-dorsal fin length 34.5% of SL; dorsal fin base length 53.7%; longest dorsal-fin spine falls within 4th–6th dorsal-fin spines, longest dorsal-fin spine 16.6% of SL; long elongated pectoral fin, reaching up to or beyond the level of anal fin origin, pectoral fin length 30.4% of SL; pelvic fins slightly long, filamentous

tip reaches vent, pelvic-fin spine length 16.2% of SL; pre-anal length 67.4% of SL, anal-fin base length 17.7% of SL, length of caudal peduncle 22.3% and depth of caudal peduncle 10.5% of SL; caudal fin lightly forked, upper lobe (30.1% of SL) slightly longer than lower lobe (27.5% of SL); length of forked part of caudal fin 16.8% of SL. Scales cycloid; scales on top of head; snout, suborbital, lips, maxilla and isthmus naked; pre-opercle with 3–5

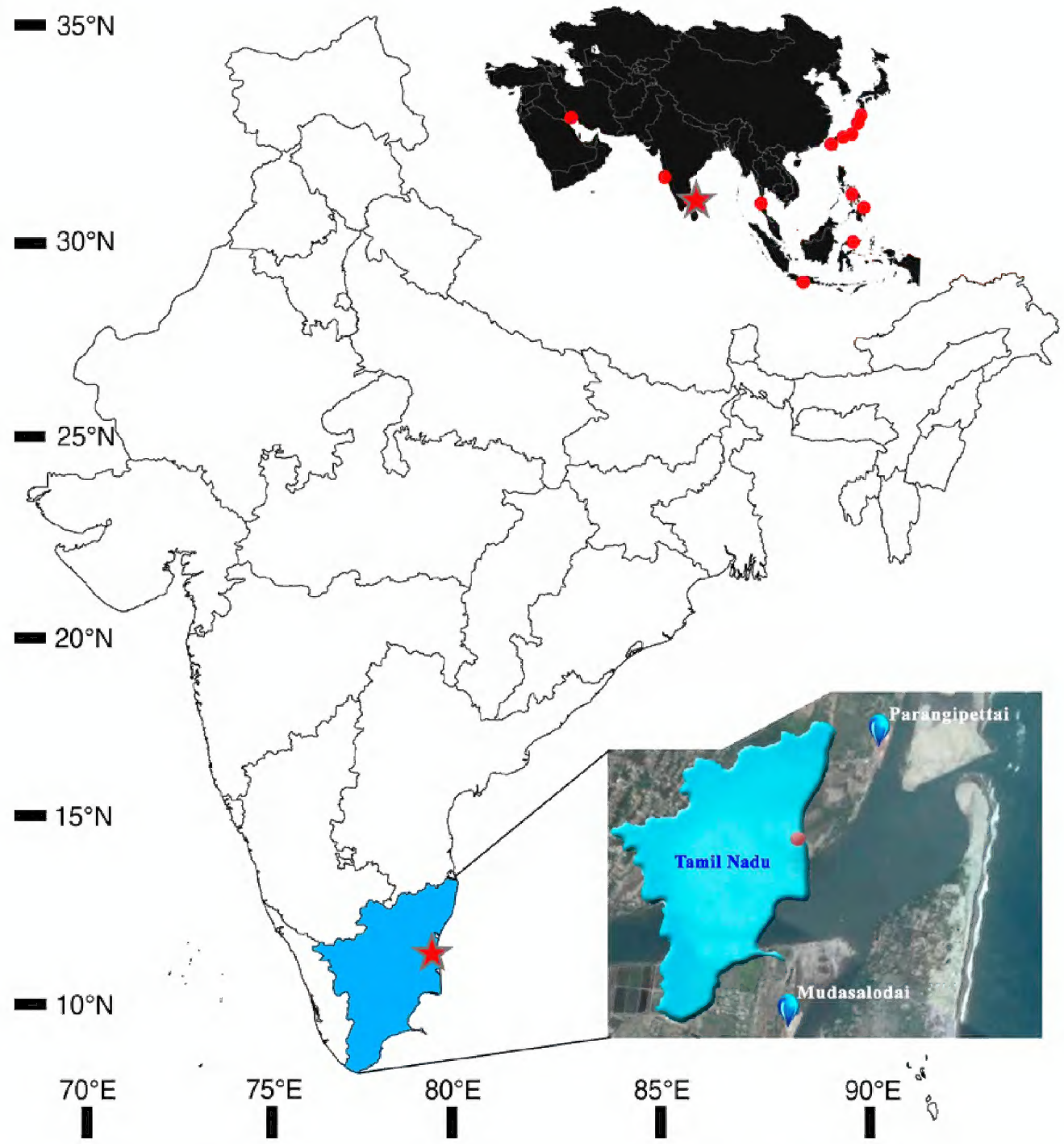

Figure 1. Map showing sampling locations, Parangipettai (site 1) and Mudasalodai (site 2), Tamil Nadu, in coastal southeastern India. Upper inset map shows occurrence records summarizing the known distribution of *Parascolopsis akatamae*. Stars show new locality records.

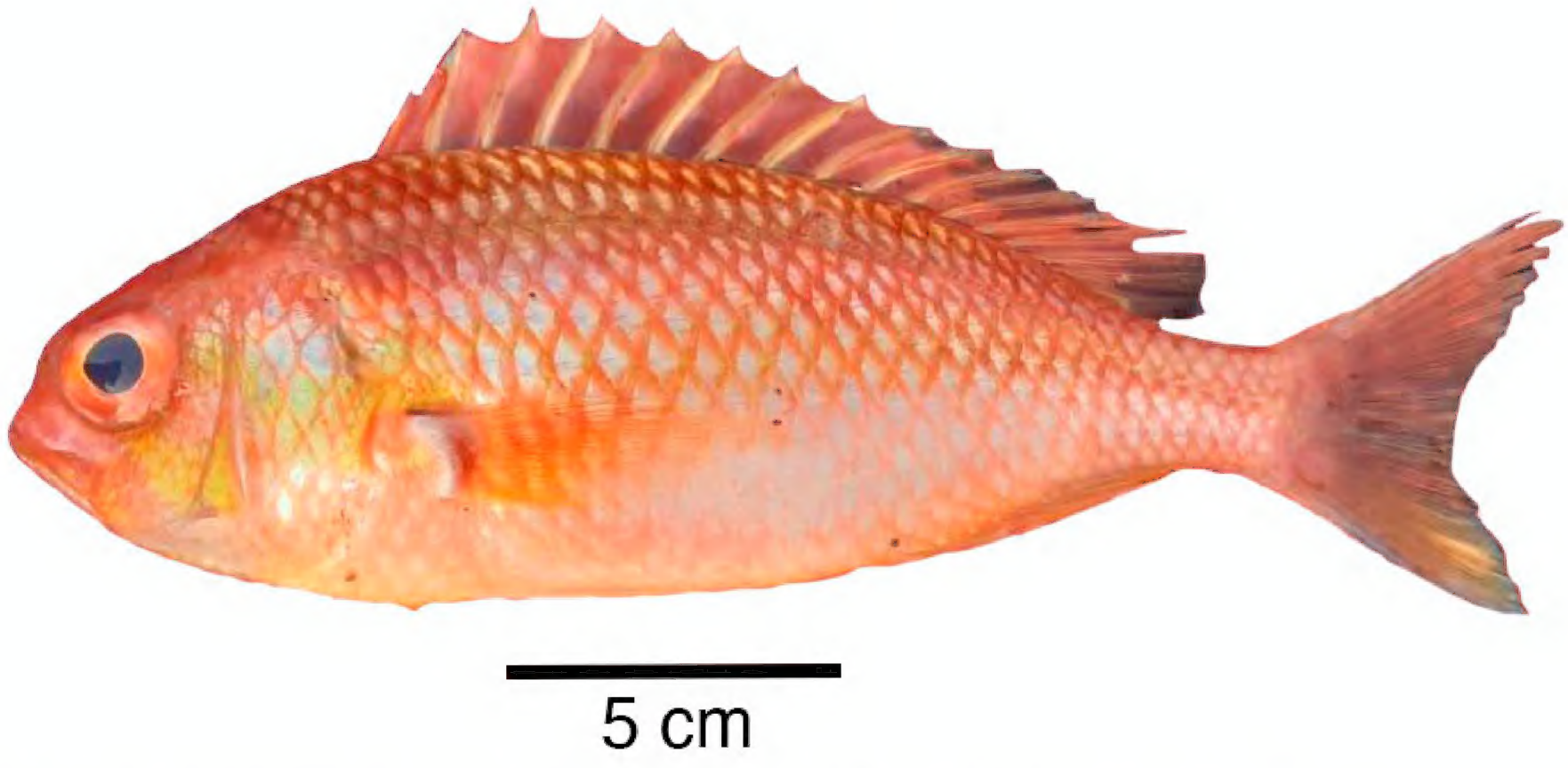

Figure 2. *Parascolopsis akatamae* collected from Parangipettai, coastal southeastern India (CASMBURM 232116422).

transverse scale rows; opercle with 3–6 transverse scale rows; dorsal fin and anal fin scale-less; axilla of pectoral fin naked; pelvic fin with axillary scales; anterior half of caudal fin covered with small scales.

Coloration and patterning were congruent with the published description of *P. akatamae*: reddish body, slightly dark dorsally and paler ventrally; iris red to orange; indistinct olive band on upper body along lateral line, paling ventrally; three pale-yellow horizontal stripes on head; posterior edge of operculum to lower edge of eye, tip of jaws to lower part of cheek, and posterior edge of eye to pectoral-fin base; caudal fin mainly yellow, with faint red vermiculate patterns present on forked part; dorsal fin yellow to red; pectoral, anal, and pelvic fins pale yellow.

Our review of published literature revealed that a few studies have reported the occurrence of *P. eriomma* from Indian coastal waters (e.g., Naik et al. 2002; Kannan et al. 2013; Karuppasamy et al. 2017), but only Kannan et al. (2013) have provided detailed morphological characteristics to substantiate identification. The morphological data for *P. akatamae* collected during this study was compared with data for the specimen of putative *P. eriomma* collected by Kannan et al. (2013) to assess if this specimen is potentially misidentified and is actually *P. akatamae*. Available data for the majority of morphological characters overlapped with *P. akatamae*. Additionally, coloration and patterning based on the live color photograph in Kannan et al. (2013) was congruent with the published description of *P. akatamae* and data from the new records reported in this study. Thus, we conclude the specimen from the Tuticorin coast of India documented Kannan et al. (2013) is actually *P. akatamae*.

DNA sequence data would be valuable for further verification of identifications and comparisons across the distribution of *P. akatamae*; however, tissue samples for specimens reported here are not available.

Discussion

The management of fish stocks and biological conservation relies on a thorough knowledge of the taxonomy and systematics of fish species (Stauffer and Kocovsky 2007). *Parascolopsis akatamae* is caught with other nemipterids from coastal waters of Parangipettai. The identitification of *Parascolopsis* species is quite difficult due to the fact that many species are very similar in morphology and distinct variations in colour pattern bleach out during preservation (Barman and Mishra 2009). Our new data on *P. akatamae* is a new addition to the list of marine fishes of Indian coastal waters. We suggest that intensive research is warranted focusing other fundamental aspects such as foraging, growth, size distribution, reproductive biology, and population assessment; there is no such information available for this species and would be helpful in assessing the conservation needs or the potential of a targeted fishery for the species.

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Authors' Contributions

Investigation: PM, CM, GS, GM, KM. Methodology: PM, GS, GM. Project administration: GM. Validation: CM, KM. Visualization: CM, GM. Writing – original draft: CM, GM. Writing – review and editing: GM, KM, CM.

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